Exhibit A

Provisional Patent
Application No. 60/461702

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

Box Provisional Patent Application
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Sir:

This is a request for a Provisional Application for Patent under
37 C.F.R. 1.53 c:

INVENTOR: Stephen Scott Strickland
109 Marian Lane
45174 Terrace Park, OH
US

TITLE: Method for Automatic Setup Configuration of Computer Numerical Controls Using Database

This provisional application includes:

<u>7</u>   pages: Specification
<u>1</u>   Page: Claims

Please charge Siemens Deposit Account No. <u>19-2179</u> in the amount of <u>$160.00</u> for the provisional application filing fee. The Commissioner is hereby authorized to charge payment and any additional filing fees required under 37 C.F.R. 1.16 and any provisional patent application processing fees under 37 C.F.R 1.17 that are associated with this communication or credit any overpayment to Deposit Account No. <u>19-2179</u>.

This invention was **not** made by an agency of the U.S. Government or under the contract with any agency of the U.S. Government.

Respectfully Submitted,

Bosco B. Kim
Registration No. 41,896

Dated: 04/10/2003

Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830
Tel. +1 (732) 321 3003

Express Mail Label No. EV200414436US

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APPLICATION FOR LETTERS PATENT
OF THE UNITED STATES

NAME OF INVENTOR(S):

Stephen Scott Strickland
109 Marian Lane
Terrace Park, OH 45174
UNITED STATES OF AMERICA

TITLE OF INVENTION:

Method for Automatic Setup Configuration of Computer Numerical Controls Using Database

TO WHOM IT MAY CONCERN, THE FOLLOWING IS
A SPECIFICATION OF THE AFORESAID INVENTION

METHOD FOR AUTOMATIC SETUP CONFIGURATION OF COMPUTER NUMERICAL CONTROLS USING DATABASE

TECHNICAL FIELD

5   The present invention is related generally to computer numerical control, and

more specifically, to the automated transfer of configuration information for computer
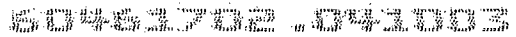
numerical control.

BACKGROUND ART

10   The process of providing information used by a computer numerical control is

generally coordinated between component vendor and the machine manufacturer by

paper document. This typically requires large amounts of manual data entry. A related

problem is that the method is both time consuming and error prone. A machine

manufacturer must also figure out how to translate the component information provided

15   by the vendor into the form required by the computer numerical control vendor. Some

relief is provided by transferring file s between machines with similar components.

However, a large number of options and combinations may complicate this task.

Other possible schemes such as plug and play components for computer

numerical control may complicate matters by adding costly parts in both labor and

20   materials. Therefore, there is a need for a cost effective, less error prone method of

automatically configuring computer numerical controls.

DETAILED DESCRIPTION

Generally a technician involved in doing launch of a setup of computer numerical

25   control typically locates configuration parameters and inputs the values manually. With

the use of a bar code scanning device, the setup application can be simplified. No manual data entry is required.

A technician scans a bar code while the setup of the computer numerical control is active. The scanned bar code is looked up for information and storage of the data. The

5 information and storage of data may be present at the computer numerical control or the information and storage of data may be present at a remote database server. It will be understood that the remote database server may be implemented as a stand alone personal computer.

The lookup and storage process of looking for configuration information may be

10 automated with the possible addition of a confirmation step for the aid of the technician. Additionally, a set up application similar to a software wizard may also be implemented in this situation.

After the bar code has been read, the information stored in the bar code is retrieved for the appropriate configuration items. Although standardization of

15 configuration items (and the configuration information appropriate for the item) has not yet occurred, there is a need for component vendors to cooperatively employ a standardized scheme for providing this information to the control vendor.

In one embodiment of the invention, the bar code provides a unique key to lookup information in a database stored in either on the mass storage device on the computer

20 numerical control or on a remote mass storage device available through a suitable network connection such as the Internet. Information for standard machine tool components is a good candidate for storage on the computer numerical control mass storage. More complex machine tool components can have configuration information

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accessed through the suitable network connection, such as the Internet or a wireless network. Security for the control would be based on a one-way only access of the data during configuration only.

The data format for data transferred over the Internet or the wireless network would be using industry standard XML. The computer numerical control provides a table that maps the XML data to a specific memory location that stores configuration values.

More information is attached with the annexed disclosure which is herein incorporated by reference.

It will be appreciated that the above described embodiments are illustrative and that those of ordinary skill in the art may readily devise their own implementations that incorporate the principles of the present invention and fall within the spirit and scope thereof.

CLAIMS

What is claimed is:

1.   A method of automatically configuring a computer numerical control to accept a

5   new configuration item, said method comprising the steps of:

scanning a bar code associated with said configuration item, wherein said bar

code provides a key for looking up information stored in a database of configuration

entries for said configuration item;

decoding said bar code to derive information associated with configuring said

10   computer numerical control to accept said configuration item; and

configuring automatically said computer numerical control with information

derived from said bar code.

Abstract:
The process of providing information used by a computer numerical control is typically coordinated between the component vendor and the machine manufacturer by paper document. This method proposes an inexpensive means for automating the transfer of configuration information from the vendor to a machine being constructed of component parts.

Background Information:
Existing methods of configuring machines require large amounts of manual data entry. This method is both time consuming and error prone. A machine manufacturer must also figure out how to translate component information provided by the vendor into the form required by the control vendor.

Transferring files between machines built with similar components provides some relief. However, a large number of options and combinations complicate this task.

Configuration information can be provided by schemes such as plug and play. However, adding electronics to a component adds cost in both labor and materials. A less expensive method for ·encoding this information involves bar coding.

Details:
A technician involved in doing setup typically launches a setup application (such as Siemens SinuComNC), locates configuration parameters and inputs the values.

This alternative method could be as simple as reading the bar code while the setup application is active. No manual data entry is required. The process continues by doing a behind-the-scenes lookup of the information and storage of the data. The lookup and storage process would be automatic with the possible addition of a confirmation step. Alternatively, the setup application could provide a "wizard" that steps the technician through the process.

Once the barcode has been read, the key aspects of this process involve the information stored in the bar code and the methods for converting and storing data into the appropriate configuration items. There is also a need for component vendors to cooperatively employ a standardized scheme for providing this information to the control vendor.

There are several schemes for accomplishing the bar coding:
A) Parameters encoded in the bar code: if there is a small amount of configuration data, the data could be stored in the bar code itself. This would be a simple approach and require no additional support beyond the bar code reader and the software in the control. It is, however, limited to simple components. A tool changer would be too complex for this method. An optional rotary axis might be simple enough if compensation data is not involved.

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B) The bar code provides a unique key to lookup information in a database stored either on the mass storage device of the control or available through the Internet. Information for standard components is a good candidate for storage on the CNC control's mass storage device. All other information would be accessed through the Internet either using a direct Internet connection or a wireless network. Security for the control would be based on a one-way only access of the data during the configuration step only.

C) A combination of A and B could be used to convey unique information along with the key code for accessing standard information. Non-standard information, such as a manufacture date and serial number could be included as suggested by method A.

Data Format:
The data transferred over the Internet would be encoded in an industry standard XML form. The control provides a table that maps the XML data to specific memory locations that store the configuration values.

Possible supplemental disclosures / related art:

Other uses for use of bar code information in a machine tool environment include:

- Downloading and executing part programs based on a bar code on the incoming part.

- Downloading tool information based on a bar code on the tool. The tool is then associated with a pocket and can be called using a unique identifier by an executing part program.

The alternative uses listed above apply to day-to-day use by an operator. Use of bar coding for configuration has more to do with OEM setup that is done prior to putting the machine into service. The source of the information in the above examples would likely be the shop itself whereas component manufacturers supply the data associated with the configuration application.

Internet
Connection

Remote Database
Server

Bar Code Scanner

Computer
Numerical
Control

Machine Component
with bar code label

Configuration Wizard	Bar Code Software	Local Configuration Database	Remote Configuration Database	Local Machine Data Server

Get Barcode

Barcode Value

Lookup Barcode

Not Found Error

Lookup Barcode

XML Configuration Data

Convert Data

Store Data

Lookup Storage Locations

Write Data to Storage

Data Storage Report